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DEPARTMENTS.

SOLUTIONS OF PROBLEMS.

ARITHMETIC.

103. Proposed by WALTER H. DRANE, Graduate Student, Harvard University, 65 Hammond Street, Cambridge, Mass.

Find the proceeds of a note discounted at a bank for 10 years at 10%. What is the meaning of the result ?

I. Solution by HON. JOSIAH H. DRUMMOND, LL. D., Portland, Me.

The proceeds would be nothing. The meaning is that the method is erroneous and unjust. It was invented to evade the usury laws. I have thought that the court which first sustained the method could not have been well versed in mathematical principles.

II. Solution by the PROPOSER.

The bank discount upon any sum exceeds the true discount for the same time and rate, by the interest upon the true discount for the given time. Bank discount then is of the nature of compound interest, for a banker in discounting a note not only deducts the interest which is to accrue upon it from that time until the date of maturity, but also charges a certain per cent. for his services, which per cent. is the interest upon the interest which is to accrue. Now the true discount of any sum for 10 years at 10 per cent. is just half that sum, and as the amount will double itself at simple interest for 10 years at 10 per cent., the discount which the banker deducts for that time, plus the interest which he charges, is exactly equal to the face of the note, neglecting the three days of grace. The note in this light is worthless in spite of the fact that its present worth is half of its face. The case is of course a very improbable one but it is simply an illustration of the rapidity with which compound interest will accumulate, although the interest here is not compound in strict sense but accumulates slower.

III. Solution by G. B. M. ZERR, A. M., Ph. D., Professor of Science and Mathematics, Chester High School, Chester, Pa.; ELMER SCHUYLER, High Bridge, N. J.; CHAS. C. CROSS, Libertytown, Md., and ALOIS F. KOVARIK, Professor of Mathematics, Decorah Institute, Decorah, Ia.

Days of grace are no longer in use. Since bank discount is simple interest charged when loan is made the proceeds would be $0.00.

This means that the bank would get twice the amount loaned, while the borrower would have the use of no money. Such a transaction is hardly possible between business men.

Solutions of problem 102 were received too late for credit in the December number from *JOSIAH H. DRUMMOND, P. S. BERG, ALOIS F. KOVARIK, P. H. PHILBRICK, ELMER SGHUYLER, GUY B. COLLIER, G. BRECKENRIDGE*, and *WALTER H. DRANE.*